

WHAT IS CLAIMED IS:

1. A joinery member with fastener pocket and fastener comprising:
a joinery member having a fastener pocket formed therein proximate an edge thereof, and a fastener-receiving bore extending
5 from said pocket to said edge; and
a fastener having a shank portion and being mounted in said pocket with said shank portion mounted in an interference fit with said bore to frictionally retain said fastener in said pocket.
2. . The combination as defined in claim 1 wherein,
10 said fastener is a pocket screw and is mounted in said pocket in a position entirely inwardly of a surface of said joinery member in which said pocket is formed.
3. The combination as defined in claim 2 wherein,
said screw is mounted in said pocket in a position entirely
15 inwardly of said edge having said bore therein.
4. The combination as defined in claim 1 wherein,
said fastener is a pocket screw, and
said shank diameter is larger than a threaded end of said
screw.
- 20 5. The combination as defined in claim 1 wherein,
said bore has an elongated cross section.
6. The combination as defined in claim 5 wherein,
said elongated cross section is oriented to extend with a
small dimension of said elongated cross section oriented in a
25 direction of greatest length of said joinery member, and
said shank portion is cylindrical with a shank diameter
greater than said small dimension of said elongated cross section.

7. The combination as defined in claim 6 wherein,
said shank diameter is not larger in diameter than a large
dimension of said elongated cross section.

8. The combination as defined in claim 1 wherein,
5 said joinery member is one of a wooden member, a composite
wood-based member, a thermoplastic member and a composite wood and
thermoplastic member.

9. The combination as defined in claim 1 wherein,
said pocket is an arcuate pocket increasing in depth in a
10 direction toward said edge and is formed in a surface of said
joinery member proximate said edge.

10. The combination as defined in claim 1 wherein,
said joinery member is formed with a plurality of pockets
each having a fastener-receiving bore extending from the pocket
15 to an edge of said joinery member; and
a plurality of fasteners mounted in said pockets with a shank
portion of each said fastener in interference fit with said bore.

11. The combination as defined in claim 10 wherein,
said fasteners are each wood screws.

20 12. A process for forming a pocket joinery assembly comprising
the steps of:
forming a fastener pocket in a surface of a joinery member
proximate and spaced from an edge of said joinery member;
25 forming a fastener-receiving bore in said joinery member,
said bore extending between said edge and said fastener pocket;
and
thereafter mounting a joinery fastener having a pointed end
in said fastener pocket with said pointed end of said fastener

extending into said bore and said fastener being secured in interference fit in said bore.

13. The process as defined in claim 12 wherein,
said mounting step is accomplished by mounting a screw having
5 a shank portion with a shank diameter larger than a diameter of
said bore into said bore to frictionally secure said screw in said
bore by said shank portion.

14. The process as defined in claim 13 wherein,
said mounting step is accomplished by mounting a screw into
10 said pocket with a threaded pointed end of said screw positioned
in said bore inwardly of said edge and a head end of said screw
positioned inwardly of said surface.

15. The process as defined in claim 12 wherein,
said step of forming a fastener pocket is accomplished by
15 routing a pocket into said surface, said pocket being progressively
deeper in a direction toward said edge; and
said step of forming a fastener-receiving bore is accomplished
by drilling said bore from said edge toward said pocket.

16. The process as defined in claim 12 wherein,
20 said steps of forming a fastener pocket, forming a fastener-
receiving bore and mounting a joinery fastener are all accomplished
while said joinery member is being advanced along a processing line.

17. The process as defined in claim 16 wherein,
said step of forming a fastener pocket is accomplished by
25 rotating a router into engagement with said joiner member while
said router is advanced at a rate of advancement of said joinery
member along said processing line.

18. The process as defined in claim 16 wherein,

said step of forming a fastener-receiving bore is accomplished by advancing a drill into said joinery member from said edge in an inwardly direction while said drill is advanced at a rate of advancement of said joinery member along said processing line.

5 19. The process as defined in claim 16 wherein,
 said step of mounting a joinery fastener is accomplished by
 positioning a pocket screw in said pocket with a threaded end
 pointed aligned with said bore, and thereafter pressing said pocket
 screw into said pocket, with said positioning and pressing steps
10 being accomplished while said joinery member is being advanced along
 said processing line.

20. The process as defined in claim 12 wherein,
 said step of forming a fastener pocket, forming a faster-
 receiving bore and mounting a joinery fastener are all accomplished
15 by moving the joinery member from one fixed processing station to
 another fixed processing station.

21. The process as defined in claim 12, and the steps of:
 after said mounting step, positioning said joinery member
 in abutting relation to another joinery member, and
20 securing said joinery member to said another joinery member
 by driving said fastener into said another joinery member.

22. The process as defined in claim 12, and the steps of:
 after said mounting step moving said joinery member with said
 fastener mounted thereto from a fastener placement station to an
25 assembly station;
 thereafter assembling said joinery member to another joinery
 member; and
 thereafter driving said fastener into said another joinery
 member in order to secure said joinery member to said another
30 joinery member.

23. A pocket screw comprising:

a monolithic screw body having a head, a shank extending away from said head and a threaded pointed end extending away from said shank,

5 said shank having a shank diameter greater than a widest diameter of said threaded end, and

 said head being formed with a plurality of annular steps of increasing diameter stepping outwardly from said shank.

24. The pocket screw as defined in claim 23 wherein,

10 said head is formed with at least three annular steps of increasing diameter.

25. The pocket screw as defined in claim 24 wherein,

 a first annular step is connected to said shank by an annular fillet.

15 26. The pocket screw as defined in claim 25 wherein,

 each annual step includes a substantially 90 degree shoulder defined by a radially extending annular oriented surface substantially perpendicular to a longitudinal axis of said screw and a cylindrical surface substantially concentric to said 20 longitudinal axis.

27. The pocket screw as defined in claim 23 wherein,

 said threaded pointed end is formed with a self-tapping thread.

28. The pocket screw as defined in claim 23 wherein,

25 said threaded end is connected to said shank by an axially tapering section.

29. The pocket screw as defined in claim 28 wherein,

said tapering section is tangential to both said threaded end and said shank.

30. A joinery member comprising:

a member having a small dimension in one plane and a larger dimension in another plane substantially perpendicular to said one plane; and

10 a fastener receiving bore with an elongated transverse cross section formed in said member with a large dimension oriented to extend substantially in said one plane and a small dimension substantially perpendicular to said large diameter and oriented to extend substantially in said another plane.

31. The joinery member as defined in claim 30 wherein,

said member has a thickness dimension less than a width dimension at an edge thereof,

15 said bore extends from a pocket proximate said edge to said edge, and

said large dimension of said elongated bore is oriented to extend across said thickness dimension.

32. The joinery member as defined in claim 31, and

20 a screw having a cylindrical shank with a shank diameter greater than said small diameter of said bore and about equal to said large dimension of said bore, said screw being mounted in said screw pocket with said shank positioned in said bore.

33. A joinery fastener positioning device comprising:

25 a positioning surface for positioning a joinery member for placement of a joinery fastener;

a feed magazine formed for feeding pointed joinery fasteners to gripping apparatus;

30 a gripping apparatus positioned to receive fasteners from said feed magazine, said gripping apparatus being further adapted

to releasably grip individual fasteners in a manner causing the pointed end of said fastener to be held in a known and controlled indexed relation to the gripping apparatus, and said gripping apparatus being movable between a fastener gripping position and
5 a fastener placement position while said pointed end of said fastener remains in indexed relation to said gripping apparatus; and

a fastener placement assembly formed to urge said fastener from said gripping apparatus into contact with said member with
10 said pointed end of said fastener in a predetermined known position in relation to said member.

34. The joinery fastener positioning device as defined in claim
33 wherein,

said feed magazine is a vertically extending bore having a
15 diameter slidably receiving enlarged heads of said fasteners.

35. The joinery fastener positioning device as defined in claim
34 wherein,

said bore is provided by a vertically extending tube member
with said fasteners being gravity biased for feeding of fasteners
20 point-first to the gripping apparatus.

36. The joinery fastener positioning device as defined in claim
33 wherein,

said gripping apparatus includes a fastener orienting assembly
formed to orient said fasteners for gripping in indexed relation.

25 37. The joinery fastener positioning device as defined in claim
36 wherein,

said orienting assembly receives said fasteners from said
feed magazine and orients said fasteners for gripping below heads
thereof by said gripping apparatus.

38. The joinery fastener positioning device as defined in claim
37 wherein,

5 said orienting assembly receives said fasteners point-first
in a near vertical orientation from said feed magazine and rotates
said fasteners to a near horizontal orientation for gripping below
the heads of said fasteners by said gripping apparatus.

39. The joinery fastener positioning device as defined in claim
38 wherein,

10 said orienting assembly includes a pair of spaced apart guide
rails slidably receiving shank portions of said fasteners
therebetween and supporting heads of said fasteners thereon, and
includes a movable slide member positioned to slide along a top
surface of said guide rails and movable therealong into engagement
with said heads of said fasteners, and said orienting assembly
15 further including a fastener body engaging member below said guide
rails longitudinally and positioned along said rails downstream
of a position at which said fasteners are received by said guide
rails from said feed magazine, and said slide member and said body
engaging member cooperating to rotate said fasteners upon movement
20 of said slide member along said top surface of said guide rails.

40. The joinery fastener positioning device as defined in claim
33 wherein,

25 said fastener placement assembly includes a movable arm formed
for movement between a position permitting gripping of said
fasteners by said gripping apparatus and a placement position
forcing said fastener from said gripping apparatus and into contact
with said joinery member.

41. The joinery fastener positioning device as defined in claim
33 wherein,

30 said gripping apparatus is movable between a fastener gripping
position receiving fasteners from said orienting assembly and a

fastener placement position in which said fasteners are positioned in a fastener-receiving pocket in said joinery member with the pointed end oriented for insertion into a fastener bore extending from said pocket toward an edge of said joinery member.

5 42. The joinery fastener positioning device as defined in claim
41 wherein,

the fastener placement assembly is formed to urge said fasteners from the gripping apparatus into said fastener bore.

10 43. The joinery fastener positioning device as defined in claim
33 wherein,

15 said gripping apparatus includes a pair of opposed resiliently displaceable gripping fingers cantilevered for resilient outward displacement from a relaxed condition spaced apart less than the diameter of said fastener body to a spread position for receipt of fasteners therebetween; and

20 a wedge member carried by said fastener placement assembly and positioned to engage said gripping fingers and separate said gripping fingers to said spread position for receipt of said fasteners and positioned to disengage from said gripping fingers upon movement of said fastener assembly to permit gripping of said fasteners.

44. The joinery fastener positioning device as defined in claim
43 wherein,

25 said fastener placement assembly is provided by a pivotally mounted arm formed to move between said gripping fingers and engage the heads of said fasteners to force said fasteners from between the resilient gripping fingers and into contact with said joinery member.

45. A process for positioning a fastener having a head, a body and a distal end for securement to a member comprising the steps of:

feeding said fastener to a gripping apparatus;

5 manipulating said fastener to a known orientation;

gripping said body of said fastener while in said known orientation with said gripping apparatus;

moving the gripped fastener to a fastener placement position proximate said member while maintaining the fastener in the known 10 orientation; and

displacing said fastener from said placement position into contact with said member for securement thereto.

46. The method as defined in claim 45 wherein,
said feeding step is accomplished by gravity feeding said 15 fastener from a tubular feeding magazine.

47. The method as defined in claim 45 wherein,
said manipulating step is accomplished by reorienting said fastener on guide rails to said know orientation.

48. The method as defined in claim 45 wherein,
20 said gripping step is accomplished by gripping said body between spaced apart fingers resiliently biased toward each other.

49. The method as defined in claim 45 wherein,
said moving step is accomplished by pivoting said gripping apparatus to said fastener placement position in which said fastener 25 is in a pocket formed in a joinery member.

50. The method as defined in claim 45 wherein,
said fastener has a pointed threaded end and said member is a joinery member, and

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-34-

said displacement step is accomplished by inserting said pointed end of said fastener into a bore in said joinery member.